

In the claims:

1. (Original) Oligonucleotide for genotyping and pathotyping the species *Pseudomonas aeruginosa* with a nucleic acid sequence, selected from the group consisting of (all sequences in 5' → 3' direction):

i)

GAAGCCCAGCAATTGCGTGTTTC
GAAGCCCAGCAACTGCGTGTTTC
GGTGCTGCAGGGTGTTTCGCCGG
GGTGCTGCAGGGCGTTTCGCCGG
CAAGATCGCCGCAGCGGTCAAC
CAAGATCGCCGCTGCGGTCAAC
TGCTGCTGGCGGCGGTGTGCTAT
TGCTGCTGGCAGCGGTGTGCTAT
CCTCGCCCTGTTCCCACCGCTCTGG
CTCGCCCTGTTCCCGCCGCTCTGG
TCGAGCAACTGGCAGAGAAATCCG
CGAGCAACTGGCGGAGAAATCCG
GCGGAAAACCTCCTGCACATGATGTT
GCGGAAAACCTCCTCCACATGATGTT
AGCTCAGCAGACTGCTGACGAGG
AGCTCAGCAGACCGCTGACGAG
AAGAGGACGGCCGCGGGTGACGCC
AAGAGGACGGCCGCCAGGTGACGCCG
GACAAGATGCGCCTCGACGACC
GACAAGATGCGTCTCGACGACCG
AGCCGACCTACGCGCCGGGCAG
CAGCCGACCTATGCGCCGGGCAG

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CCGTTCGAACGGCTCATGGAGCA
GCCGTTCGAACGACTCATGGAGCA
TGGAGCAGCAAGTGTTCCCGGC
TGGAGCAGCAACTGTTCCCGGC
GAACAAGACCGGTTCCACCAACGG
AACAAGACCGGCTCCACCAACGG
GCGACCTGGGCCTGGTGATCCT
GCGACCTGGGACTGGTGATCCT
GCCGACCAACTGAACTCCAACCTCG
GTCGCTGAACGGCACCTACTTCA
CAGCCTGCGGTCATGTCCTCGG
CGCCAGTTTGAGAACGGAGTCACC
GCGCGATCTTCTCCACTTCATCGG
GCCTCCGCGATTGAACATCGTGAT
GTAGCCGGAGTCGAGCGGAATCAT
GTGAGCATGGAATCGGCAGTCGTT
CGAGGAGTTTCGGACCCGCTTTGA
AATAGGACCGGCAGAACGGGGCATT
GCGCCTTCTCCTCTTTGCAGATGT
CAGTATGGTACGGACACGAAGCGC
GCATCATTGCGCGTCACATCTGGT
TCTGAACTGCGGCTATCACCTGGA
AATTGATGGCTTCTCAGGCGCAGG
AGTCATGGGACTGAATACGGCGACT
TTCTCGGTGTCGAGGGATTCTCGG
TGGTAGCTCTCGACGTACTGGCTG
CCCGTTGCTCATAACCCGTTCTG
AGGGCATTCTCAGGTGGACTCAGG
ACCTGTGTCGCTGGAGGGTATGTT

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AGCGTCCCTGACCAACCTCATCAG
CGCCAACAATTCGCCATTACAGCG
TCCAACAGGCAGGAGTACAGGGTG
CGCTGCACATACAGGTCCGTTCTC
AGCCCAGCAATTGCGTGTTTCTCCG
AGCCCAGCAACTGCGTGTTTCTCC
GCTGCTGGCGGCGGTGTGC
TGCTGCTGGCAGCGGTGTGCT
CAGAAAGCTCAGCAGACTGCTGACGAG
GAAAGCTCAGCAGACCGCTGACGAG
ACGGCCGCCGGGTGACGCC
ACGGCCGCCAGGTGACGCCG
GCCGACCTACGCGCCGGGC
AGCCGACCTATGCGCCGGGCA
GTTCGAACGGCTCATGGAGCAGCA
GTTCGAACGACTCATGGAGCAGCAAG
CAGCCCAGTCAGGACGCGCA
AGTGACGTGCGTTTCAGCAGTCCC
GTGTCACGGCCCATGTCTAGCAGC
CGAAGTCTGAGGTGTGGACCCGC
CGCTGGAGGGTATGTTCCGCAAGG
CGTACTCAGCTTCTCCACCCAGCG
CCTGGACCTCTCCAAGGTTCGCCT
GCCATTCCGACGACCAAACAAGGC
GTGCTGCAGGGTGTTTCGCCG
GCTGCAGGGCGTTTCGCCG
CAAGATCGCCGCAGCGGTCAACGAC
CAAGATCGCCGCTGCGGTCAACGAC
GCTCAGCAGACTGCTGACGAGGCTAACG

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GCTCAGCAGACCGCTGACGAGGCTAAC
CGACCTACGCGCCGGGCAG
CGACCTATGCGCCGGGCAGC
CGTTCGAACGGCTCATGGAGCAG
CGTTCGAACGACTCATGGAGCAGC
CGACCTGGGCCTGGTGATCCT
GCGACCTGGGACTGGTGATCCTGG
CAGTTGTCGCCAGGTCTGGAGAATCC
CACATCAATGTCAGCCCACGCCA
CTGGAGCCTGCGAAAGTGGCTC
ACGAGGGTGATGGCTGGGAATACG
GCCAATTGGGTCAGCAAGCAACG
CGTGTCGCGAACTCGCATGGC
AGGCCATGGGCTAGCCGGATGC
CGAAGCGTAGGGTCTTCGTAGCC
TGCGAGGACCAGAAACCTTGATGG
CGGTATGAAGATGGGTGGTTGGGTCG
CCTGAATCCGACCATTCGCGAGTC
TCGGACTGTACTCCTACGAAGCAGC
CCAATCCCTATCGCTGGAACCGTACC
GCTCGGGACTCGCATTTCTGTCC
GCGTTATTGCTCGGTCTCTCCTCG
TGCATAGGAGTCATGCCGACAGCA
GCCTGCCTACTTGTTCCCAACGC
GGCTGTATTGCCCGCCATTCTCC
CGACAGACAGAAAGGGTTCTTGCGC
CACCATGCAAATGCTCGATGGACTGC
GCAGGCGTCCAAGTTGGAGCTCTCC
GGAACACAACGTGGGGCGTGAC

CCAGTTGGCACCACCATGCTTGC
GACCGCAAGCAGAAACGGCATGC
CCATGGTCGGAACAGGCACGATATGC
CCACTCGATCATGTTGAGCATCGGCTCC
GGTTAGTCCCTTCTGCCCCGCATCG

- ii) oligonucleotides matching one of the oligonucleotides under i) in at least 60%, preferably in at least 80%, and particularly preferably in at least 90%, 92%, 94 %, 96% of the bases and allowing specific hybridization with nucleic acid sequences of bacterial strains of the species *Pseudomonas aeruginosa*,
- iii) oligonucleotides differing from one of the oligonucleotides under i) and ii) in that they are extended by at least one nucleotide, and
- iv) oligonucleotides hybridizing with a sequence, which is complementary to an oligonucleotide under i), ii) and iii), under stringent conditions.

2. (Original) Microarray device comprising a support element, on which oligonucleotide probes are immobilized on predetermined regions, for specifically detecting bacterial strains of the species *Pseudomonas aeruginosa*.

3. (Original) Device according to claim 2, characterized in that the device is a reaction tube having a shape and / or size typical for a laboratory reaction tube and having a support element, on which oligonucleotide probes are immobilized on predetermined regions, arranged on one of its base areas for specifically detecting bacterial strains of the species *Pseudomonas aeruginosa*.

4. (~~Original~~ Currently Amended) Device according to claim 2 ~~[[or 3]]~~, characterized in that the oligonucleotide probes are selected in such a way that they detect 30% to 70% of the population of *Pseudomonas aeruginosa* strains in each case.

5. (~~Original~~ Currently Amended) Device according to ~~any one of claims~~ claim 2 [[to 4]], characterized in that the oligonucleotide probes are specific for nucleic acids having a base substitution compared to the sequence of the reference strain of *Pseudomonas aeruginosa*.

6. (~~Original~~ Currently Amended) Device according to ~~any one of claims~~ claim 2 [[to 5]], characterized in that the oligonucleotide probes are specific for nucleic acids present in only one or few strains of the species *Pseudomonas aeruginosa*.

7. (~~Original~~ Currently Amended) Device according to ~~any one of claims~~ claim 2 [[to 6]], characterized in that the oligonucleotide probes are specific for nucleic acids present in pathogenicity islets in the genome of *Pseudomonas aeruginosa*.

8. (~~Original~~ Currently Amended) Device according to ~~any one of claims~~ claim 2 [[to 7]], characterized in that the oligonucleotide probes are specific for nucleic acids present in disease-associated genes like *exoS* and *exoU*.

9. (~~Original~~ Currently Amended) Device according to ~~any one of claims~~ claim 2 [[to 8]], characterized in that the oligonucleotide probes are specific for nucleic acids contained in genes coding for flagella of *Pseudomonas aeruginosa*.

10. (~~Original~~ Currently Amended) Device according to ~~any one of claims~~ claim 2 [[to 9]], characterized in that the oligonucleotide probes are selected from the oligonucleotides according to claim 1.

11. (~~Original~~ Currently Amended) Method for specifically detecting bacterial strains of the species *Pseudomonas aeruginosa* in a sample, comprising the following steps:
a) contacting the sample with a nucleic acid chip in a microarray device according to ~~any one of~~ claims claim 2 [[to 10]]; and

b) detecting the interaction between the oligonucleotide probes and the target nucleic acids contained in the sample.

12. (Original) Method according to claim 11, characterized in that the target nucleic acids contained in the sample are amplified before the detection.

13. (Original) Method according to claim 12, characterized in that the amplification is performed by means of multiplex PCR.

14. (Original) Method according to claim 13, characterized in that primers, which have similar melting points and / or similar binding kinetics, are used for the amplification.

15. (~~Original~~ Currently Amended) Method according to ~~any one of claims~~ claim 12 [[to 14]], characterized in that the amplification is performed linearly.

16. (~~Original~~ Currently Amended) Method according to ~~any one of claims~~ claim 12 [[to 15]] characterized in that the primers are selected with a nucleic acid sequence selected from the group consisting of (all sequences in 5' → 3' direction):

ACGCGGATGTCCTGGATTG

CTGAAGAAGGGGCGCTACGCGGCGTACCGGGCAAGGTGATAGCTCGGTGAAACATC

GGGAGGGTCATCCAGCAAGCCATTGCGCGGAGTCGCTTTCCGCCATCGTGGAGTCG

CTTTCCGCCATCGAAGGGGCGTTTCACGCTGACGC

ATCCGGAAGGGGCGTTTCACG

TCCACACCTCAGACTTCGGCG

TATTGACGACCTACCGCGCGC

GCAACTGATGTTTCGCCCAGC

CGCAACTGATGTTTCGCCCAGC

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ACACGCAACTGATGTTCGCCC
TGTCCTCGGCTCAGTTCAACG
AACACCTTGGCGTTTGTCCC
GCAACACCTTGGCGTTTGTCC
TCAAGCTCGTTGTGGACCGC
GTTACGACGGCGTGCTGTCGG
ACGCAACGTATTCGGCGACCC
CGCAACGTATTCGGCGACCC
AGCTGATGGTATCGCCGTCGC
CTAGTGATCGCACCGGAGCC
AGCCTCGACACCGGTTCTCG
TCGTTTCATCCCCAGGCTTCG
ACCATCTCGTTTCATCCCCAGG
TTCTGAGCCCAGGACTGCTCG
TCGACGCGACGGTTCTGAGCC
TGACGTTCTCGCCGGTAGCG
CAGTAGCGGTACCGGTCTGCG
CAGTAGCGGTACCGGTCTGC
TTCCTCGCCGGCATAGTAGGC
CGAGGACGAGGCATCTTCCGG
GCAGGTAGCAGGTTTCCAGG
AACTGTTCTTCTGCGCGGCG
TGATCGGCTTGGTCTCGCAGG
GCTGATCGGCTTGGTCTCGC
GAGGCGTTCTGCTCGTGGTCG
TTTTTCCAGCATGCGCAGGG
GCTGGCTTTTTTCCAGCATGCG
TTGCGGCTGGCTTTTTTCCAGC
TTGGGATAGTTGCGGTTGGC

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CGTAGGCGATCTTCACCCGC
TGGCGTAGGCGATCTTCACCC
GGCGAGATAGCCGAACAGGC
GCGGCGAGATAGCCGAACAGG
CACTTGCTGCTCCATGAGCC
GAGGTCGAGCAGGCTGATGC
TAGGTCGCGAGGTCGAGCAGG
GTCCTTCTGCACCGAGTCGG
CGCATCTTGTCCTGGGTCAGG
TCGTCGAGGCGCATCTTGTCC
ACGTCGAGGTGGGTCTGTTCG
GTAGCCTTCGGCATCCAGCG
TCGGCATTGGGATAGTTGCGG
CCTCCTGTCTCATGCCGATGC
GCATTCGCCACGGAAGGAAGG
GAAGGCATCATGGCATTCGCC
GTCATGGGGTTTCCCAGAGACC
GATCGCGATGTCGACGGTGCC
CGATCGCGATGTCGACGGTGC
TGCCGATCGCGATGTCGACG
GACGAATACCCAGCTGCGTGG
GCAGACGAATACCCAGCTGCG
CGCGACGTCGTGACGTCAGC
ACTTTCGGCTCTTCGGGCTGG
AGGTAGAGACTCGGGGGAACC
TCGTTTTTCGGTCATGGCCAGG
TTCCGCGACGAACATCCGTGG
CGCTTCCGCGACGAACATCCG
GGATCGCTTCCGATAGGGCAGC

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AGAGGCATGGGTCTGTACCG
TCTGTCAATCCCCCTTTGGGG
AGCCCCCTTTCTGTCAATCCCC
GGCTTCCTACCGAAGGTCAGG
TGAGGGCTTCCTACCGAAGG
TTCAAGGTCATGGGCAATGCC
AGTCCCTTCAAGGTCATGGGC
GCCGACTGAGCTGTAGCTCGG
GGCCGACTGAGCTGTAGCTCG
ACCAGACTGGTCAATGGTGG
CCCGTGTTCCGTAGACCTTGC
AGCAGTTACCCACAGCATGG
CAGCAGTTACCCACAGCATGG
CTACACTCCAACCGCTGGTCC
GACCTACACTCCAACCGCTGG
TTCCCTTGCTGCCGAGAAGC
TAATAGGCGAGCCTGCCGTCC
TCCACGCCGAGGGACGTGCC
GCTCCACGCCGAGGGACGTGCC
CGCGGTGCTGGTTGCGCTGC
CCAATGCCCAGGGCCAGCGGA
CGCTGGCAGTTCCGCTGGCC
CAGGGTCGCCAGCTCGCTCGCC
AGGGTCGCCAGCTCGCTCGC
AGTGATCTGCCGCGGCCCTGCC
GTGATCTGCCGCGGCCCTGC
GTTCCACAGGCGCTGCGGCGC
GTTCCACAGGCGCTGCGGCG
CAAAGCCCCTGGTCGCGCGG

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GCAGCTTTTCCACCGCCGGCGG
AAACTGCCCCGCCCCCATCC
GGAAAACTGCCCCGCCCCC
ACGCTCGCAGCGCCTCACGCG
GGCCTGGCTGCGAACGCTCGC
GGGGTCGAGACGTGTACATGG
TTCCTGGGCCAGAGTTGGACC
AGCTTAAGGCCGTGGCACTCG
CCGGAGAATTCGCGTCCACC
TGCTGACGATGAAGCCCCAGC
AGGAGGCCGATGACAACACCC
TGCCGATTCCATGCTCACGCC
ACGACGTCACCGTCGAGACCG
ACCGCCTTTCTGGTGAGCTGG
AGCCAAGACGGTTGTTCGCGG
TCAATGACGCCGAGTTGGCGC
CTCGGACAGGTTACGCTGG
GCCATTCGCTGCAACACCTCC
GCGCGCGTTCGAGAAACAGG
CGGAGGTTGAAAAGCTGGCCC
ATGCCATCGTTGAAGGCACCGC
TGCCATCGTTGAAGGCACCG
TCTGGCGGAATCAGGTAGGCC
CTTCCGGGGAGAAACCACCG
ACCTCCAGCACCGACACACC
ATCCGATCCACCTCCAGCACC
CGTTCAGGTCGTAGACCGCGC
GCGATACCAACTGTCCTGCGGC
TGCCGAAGGTGAATGGCTTGCC

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CCTGATGGTCCGATCCCAGC
GCCGAGGGTCAAGAACCACTGG
TCTTGGCCCAGTCATAGCGGC
TAACCCCAAGGCCCATTTGGAGG
GCCACCGCCTTCGAATAACCCC
AATTGCTCGAGGGATGCGGC
GGTCGAAACGGATGCGCAGG
GCCCCGCGTCATTTTCACGTCG
AATGCTCTGGGCAACGAGCC
CTACCCAGCTTGGGCGTAGC
AAGCGATAGCCGTGCTCCTGC
CCGGCTATATCCGCGGCTACC
ATTGGCGCTGCTGTTTACGCCC
GGTGGCGTCGGGTTTTTCTGC
AGGTCGTAGCGGAAGGTGGTGG
ATCTGAACCGAGGGGATCCGC
CCCGGGAGTCATTGGTCTGG
GCCTGTTGGACCCCTTTGACC
TACTCCTGCCTGTTGGACCCC
CGCTCAAGCGCTATCCCACC
CGCCATCGGCCTGTACAACG
CGGTAGAGAGCTGGGTTGGC
AACCTGGAGCTAGGGCAGAGC
GGTGCTCGACCCAAGCATCG
TCCTTGAGTTCCTTGGCGCGG
CAACACGCGACTGGCGATCC
TACATCATCCGCAACGGCGGC
TATTGACGACCTACCGCGCGCC
CACCAAGAACCCGCTGCTCG

ATCGTGGCAGGATGTCCACCG
TAGGCGGGCCTTTTGAAGGTGC

17. (Original) Use of the oligonucleotides according to claim 1 for specifically detecting bacterial strains of the species *Pseudomonas aeruginosa*.

18. (Original Currently Amended) ~~Use of the oligonucleotides according to claim 1 or of the device according to any one of claims 2 to 10 or of the A method according to any one of claims 11 to 16~~ for genotyping and pathotyping *Pseudomonas aeruginosa*, comprising the following steps:

a) contacting the sample with a nucleic acid chip in a microarray device according to claim 2;
and

b) detecting the interaction between the oligonucleotide probes and the target nucleic acids contained in the sample.

19. (Original Currently Amended) ~~Use of the primers according to claim 16~~ A method for amplifying nucleic acids of bacterial strains of the species *Pseudomonas aeruginosa*, comprising the following steps:

a) contacting the sample with a nucleic acid chip in a microarray device according to claim 2;
and

b) detecting the interaction between the oligonucleotide probes and the target nucleic acids contained in the sample.